

REMARKS

Claims 1-4 are pending in this application. By this Amendment, claims 1-4 are amended for clarity and claims 5-7 are canceled. No new matter is added by this amendment. Support for the language added to claim 1 may be found at, for example, page 11, lines 17-26 of the specification, and at Figs. 2A-4C.

I. The Claims Define Patentable Subject Matter

Claims 1, 2 and 4-7 are rejected under 35 U.S.C. §102(e) over U.S. Patent No. 6,635,497 (Aggarwal); and claim 3 is rejected under 35 U.S.C. §103(a) over Aggarwal in view of U.S. Patent No. 6,566,261 (Ikegami). These rejections are respectfully traversed.

Claims 5-7 are canceled. Thus, with respect to claims 5-7 this rejection is moot.

Claims 2-4 depend from claim 1. Claim 1 recites forming a silicon oxide film without providing a hydrogen barrier film so as to cover the lower electrode, the ferroelectric film, and the upper electrode. As discussed in more detail below, Aggarwal fails to at least disclose this feature and Ikegami fails to remedy the deficiencies of Aggarwal.

More specifically, Aggarwal teaches forming a capacitor dielectric film in an amorphous state at low temperatures and performing a crystallization anneal after the upper electrode formation process or etching process (see col. 12, lines 7-15 of Aggarwal). Aggarwal also teaches a method of forming a capacitor dielectric film in an amorphous state and then crystallizing the film in later process steps, which is commonly employed for Bi ferroelectric films. Aggarwal further teaches that PZT is preferably formed using a MOCVD process. Thus, according to Aggarwal, PZT is already crystallized during the film formation process. Therefore, as for PZT, an anneal which is performed after the film formation implies an anneal for recovering damage to the film. Thus, Aggarwal fails to disclose, teach or suggest a capacitor (upper electrode, ferroelectric film and lower electrode) being directly covered with a silicon oxide film without providing a hydrogen barrier film, as recited in claim 1. Ikegami fails to remedy this deficiency.

Furthermore, Aggarwal merely teaches forming PZT using a MOCVD process but fails to suggest placing a PZTN complex oxide in an amorphous state after performing a pre-heat treatment in an oxidizing atmosphere and subsequently crystallizing the PZTN complex oxide which is in an amorphous state by performing a post-silicon-oxide-film-formation anneal, as recited by claim 2. Ikegami fails to remedy this deficiency.

For at least the foregoing reasons, claim 1, as well as claims 2-4 depending therefrom are not anticipated or rendered obvious by Aggarwal and/or Ikegami.

Withdrawal of the rejections is respectfully requested.

II. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of the pending claims are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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